

Pavonia (*Malvaceæ*) in the Society Islands

F. R. FOSBERG & M.-H. SACHET

Summary : The genus *Pavonia* includes a few species from Oceania, among them two species from the Society Islands, *P. papilionacea* Cav. and *P. lourteigiæ* Fosberg & Sachet, *sp. nov.*, both rare and probably extinct. The first is described in detail from the only four collections known from Tahiti, together with the plates by PARKINSON and CAVANILLES. The second, from Bora Bora is sufficiently distinct to be described here as new. Neither plants has been collected since the middle of the 19th century.

Résumé : Le genre *Pavonia* ne comprend que quelques espèces d'Asie et d'Océanie, parmi lesquelles se trouvent deux espèces rares et peut-être disparues des Iles de la Société, *P. papilionacea* Cav. et *P. lourteigiæ* Fosberg & Sachet, *sp. nov.* La première, originaire de Tahiti, est décrite en détail d'après les quatre collections connues et les illustrations de PARKINSON et CAVANILLES. Une collection de Bora Bora en diffère suffisamment pour représenter une nouvelle espèce. Ces deux plantes n'ont pas été retrouvées depuis le milieu du XIX^e siècle.

F. Raymond Fosberg & Marie-Hélène Sachet, Dept. of Botany, Smithsonian Institution, Washington, D.C., U.S.A.

Pavonia is a large genus principally American but with a considerable number of African species and a few in Asia and the Pacific. It is related to *Hibiscus* but is most readily distinguished by its schizocarpic fruit. It is readily distinguished from *Sida* and *Abutilon*, two other large widespread genera with schizocarps, by the presence of an involucre or "epicalyx". The mericarps of *Pavonia*, as in *Sida*, have one seed each. We are here treating two probably extinct species from the Society Islands, one of them described here as new.

PAVONIA Cavanilles

Diss. 2 [App 2] (1786) ; *l.c.* 3 : 132 (1787), *nom. cons.*

Species of *Pavonia* are not numerous in the Indo-Pacific region. RIEDEL, *Fl. Iranica* 120 : 34-36 (1976), reports three species from the Iranian region. STEWART, *Fl. W. Pakistan* : 481-482 (1972), lists nine species from West Pakistan. One of these, *P. repanda* Spr., is sometimes placed in *Urena*. HOOKER, *Fl. British India* 1 : 330-332 (1875), includes only six. Our own investigations yielded only four in Ceylon, including one new one.

There seems to be only one in Indo-China and Malaya. BORSSUM-WAALKES, *Blumea* 14 : 133-137 (1966), finds but three species in Malesia, one of them introduced. One American species, *P. hastata* Cav. is introduced in Australia. Then, going eastward across the Pacific, there are no *Pavonia* until we reach the Society Islands, from whence came *Pavonia papilionacea* Cav., one of the original species of the genus.

This species has been known since the first plant collection from the Pacific Islands, by BANKS & SOLANDER, who, on Captain James COOK's first voyage around the world, in 1769, collected the specimen on which CAVANILLES based the species.

During the century following that, *P. papilionacea* was found, to the best of our knowledge, only four times, the last by BIDWILL, about 1850. This was the last time the plant was seen living, at least so far as there are definite records. NADEAUD, *Enum. Pl. Tahiti* 67 (1873), mentions it as in large valley mouths, Papeava, Tipaeauri, etc., but cites no collections, nor have we seen collections of it by him in Paris. None of the other French writers even mention it. Martin GRANT, during over a year of concentrated field work in the Society Islands in 1930-1931, did not encounter it. We are doubtless justified in considering it extinct.

A specimen of *Pavonia*, similar to *P. papilionacea*, in the Paris Herbarium, was collected by DUMONT D'URVILLE on Bora Bora, on the Voyage de la Coquille (1822-1825). Through the courtesy of the authorities of the Laboratoire de Phanérogamie, Muséum national d'Histoire naturelle, we have been privileged to study this specimen. Dr. Alicia LOURTEIG had pointed out to one of us that it differed in pubescence from *Pavonia papilionacea*, so we requested it on loan, and have been able to compare it in detail with an isotype (US) of *P. papilionacea*.

The two are close, indeed, but differ in a number of details, especially in indument, as described below.

The Bora Bora plant has never been recollected, and is most likely also extinct. A number of collectors, including ourselves, have visited Bora Bora in the last 50 years and have not found it.

Comparing two extinct species, using only a few imperfect herbarium specimens is really a form of paleobotany, and imposes severe limitations on the amount and kinds of information obtainable. It seems worthwhile to describe these two as fully as possible.

Fortunately there exists an excellent habit painting of *Pavonia papilionacea*, made by Sydney PARKINSON at the time the plant was discovered. This painting was never published, but is preserved in the British Museum (Natural History), and through the courtesy of the authorities there, we have a color-transparency of it. It shows that the plant had an attractive flower and gives a number of details not or only poorly evident from the specimens. CAVANILLES also illustrated it with an excellent line drawing, published with his description.

The following descriptions are based on the available specimens and the PARKINSON painting.

***Pavonia papilionacea* Cavanilles**

Diss. 3 : 140, *tab. 49, fig. 2* (1787) ; NADEAUD, *Enum. Pl. Tahiti* 67 (1873) ; FOSBERG & SACHET, *Micronesica* 2 : 157 (1966).

Suffrutescent herb or slender shrub, stems terete or slightly subangular, pubescent with mostly simple, white, glistening tapering sharply pointed unicellular hairs, these smaller and more numerous on the slight ridges on the stems, a very few branched or stellate white hairs are scattered among the simple ones; the surface between the hairs is granular roughened; short slender flowering branchlets in the leaf-axils, these pubescent with a mixture of the white unicellular hairs and thicker, blunt, closely septate, rusty brown hairs, the proportion of the latter increasing distally from very few to predominant just below the floriferous part; leaves orbicular, obscurely sub-lobate, somewhat acuminate at apex, cordate at base, somewhat declinate, palmately 7-9-nerved, lesser veins leaving nerves at a wide angle, the smaller branchings at about 90°, the network obscure above, clear but inconspicuous beneath, pubescence of blade on upper-surface rather sparse, of mixed stellate and simple short stiff pointed hairs, intervals somewhat granular-roughened, under-surface prominently stellate-hirsute, hairs on veins mixed stellate and simple, margin irregularly serrate-dentate, teeth ovate, somewhat mucronate, petiole 2.5-6.5 cm long, densely hirsute with mostly simple, a few stellate, white, pointed hairs; stipules about 3 mm long, ovate, somewhat oblique, acuminate, nearly glabrous above, hirsute on margins and midrib beneath; buds clustered at ends of short axillary fertile branches (very few on a branch in painting), peduncles uniflorous, densely pubescent with a mixture of white and brown hairs, obscurely jointed to a somewhat shorter pedicel that is densely pubescent almost entirely with the rusty-brown septate hairs; involucre of 10 linear-subulate bracts 9-10 mm long, pubescent with almost all brown hairs toward the base, changing to almost all long white unicellular hairs distally; calyx about 17 mm long, united to about 1/4 the distance from the base, segments 5, broadly lanceolate, acute, convex and densely short pubescent externally, with a few long white hairs towards apex, more sparsely fine white pilose on the concave inner surface; petals 5, obovate, obtuse to rounded at apex, clear yellow, shading to somewhat brownish (in painting); staminal column shorter than petals, strongly declinate, then slightly curved upward, free filament tips issuing mostly from upper portion of staminal tube, few from lower down, fairly long, whole androecium shorter than petals; style 3 cm long, with 8-10 strongly ascending short (1.5 mm) branches, well exerted from staminal tube, with stigmas exerted somewhat to considerably beyond the anthers (details of androecium and gynoecium mostly from PARKINSON painting); carpids (mericarps) about 5 mm long, spineless, obovate or slightly obovate, in side-view hemi-obcordate, outer surface curved, with a rugose ridge on either side, a slight median keel and distal mucro, stipitate base with a slight constriction above base (the only fruits seen were 3 mericarps in a pocket on the BM sheet designated as lectotype).

The type collection is from Tahiti by BANKS & SOLANDER in 1769. Of this we have seen five sheets, two in the British Museum, two in Paris, and one in Washington. In 1966, we had designated as lectotype the BM sheet marked *HB 14*. However, we have recently learned that the specimen sent to CAVANILLES by BANKS survives in the Herbarium at the Madrid Botanic Garden, and should be considered the holotype. We are grateful to Dr. P. BLANCO for this information and for photographs of this sheet. Other than these we have seen only the three sheets in Kew, and one in the British Museum, cited below. Two of them give the native name as "fautea".

MATERIAL : SOCIETY ISLANDS : TAHITI : *Banks & Solander s.n.*, s. loc., in 1769 (holotype, MA ; isotypes, BM, P, US) ; *Hinds s.n.*, s. loc., in 1841, K ; *Barclay s.n.*, s. loc., K ; *Wiles L. Smith s.n.*, s. loc., in 1792, BM ; *Bidwill s.n.*, Fautaua Valley, K.

Pavonia lourteigiæ Fosberg & Sachet, *sp. nov.*

A *Pavonia papilionacea*, *foliis trilobatis infra non stellatis, reproductivis partibus minus ferrugineo-pubescentibus, flore minore, mericarpio non stipitato, cristis mericarpiorum non rugosis differt.*

A slender shrub or suffrutescent herb, close to *Pavonia papilionacea*, but with stem pubescence more sparse, hairs less recurved ; leaves much more prominently trilobed, apex more strongly acuminate, leaf pubescence of simple hairs, without stellate hairs on under surface, teeth on margins somewhat more prominent, with rounder, less mucronate points ; the brown septate hairs shorter and much fewer in proportion to long unicellular white ones though with the same distribution as in *P. papilionacea* ; only on the outer surface of the calyx lobes are the brown hairs predominant and here they are on the average conspicuously shorter ; involucre bracts 6-7 mm long, calyx shorter, about 1 cm long, lobes broader in proportion, bluntish rather than acute ; petals much shorter, scarcely 10-12 mm long (one flower, only) ; staminal column about 15 mm long, pollen grains muriculate ; style about 20 mm long, its branches 2 mm long, stigmas puberulent ; carpids blackish, spineless, minutely and rather sparsely white-hispidulous, about 5 mm long, from the side only slightly hemi-obcordate, nearly as broad as high, very broadly oblong in front view, with a noticeable low median keel, lateral ridges scarcely rugose, apical mucro pronounced, base not at all stipitate, scar narrowly obcordate.

This species is very close to *P. papilionacea* but the leaves are more sharply trilobate and have simple pilose rather than stellate pubescence beneath, the reproductive parts are less ferruginous, the flowers are much smaller, and the mericarps are not at all stipitate, have a more prominent median keel and nearly smooth lateral ridges or crests. The surface of the mericarps is hispidulous but we have no information on that of *P. papilionacea*.

The plant has only been collected once, to the best of our knowledge, and is now probably extinct. It was found on Bora Bora, in the Society Islands, over 150 years ago. We are dedicating it to Dr. Alicia LOURTEIG, who first noted the difference in leaf pubescence.

SOCIETY ISLANDS : BORA BORA : *Dumont D'Urville s.n.*, s. loc., Voyage de la Coquille, 1822-1824 (holotype, P).